FRANÇOIS COSTA

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EDUCATION

ETH Zürich *Sep 2022 - March 2025*
MSc in Computer Science; Major in computer systems; GPA: 5.85/6.00

ETH Zürich *Sep 2019 - Feb 2022*
BSc in Computer Science
Graduated early in 5 semesters; Teaching assistant in computer architecture and FPGA programming

PUBLICATIONS

- Lazar Cvetković, **François Costa**, Mihajlo Djokic, Michal Friedman, Ana Klimovic; Dirigent: Lightweight Serverless Orchestration, SOSP 24

- Charly Castes, Neelu S. Kalani, Sofia Saltovskaia, Noé Terrier, **François Costa**, Edouard Bugnion; Kicking the Firmware Out of the TCB with the Miralis Virtual Firmware Monitor, Poster: SOSP 24

EXPERIENCE

Researcher - Data Center Systems Laboratory EPFL - Lausanne *September 2024 - March 2025*

- Working on Miralis, a RISC-V Rust based firmware emulator designed for data center and OS security.
- Accepted in the selective Summer@EPFL program (acceptance rate $\leq 2\%$), deferred as a master thesis.

Software engineer intern Citadel - London *July 2024 - September 2024*

- Eleven weeks summer internship as software engineer intern in the portfolio construction group (PCG).

Researcher - Efficient Architectures and Systems Lab ETH - Zürich *June 2023 - June 2024*

- Implemented a FaaS cluster manager beating AWS-Lambda, achieved 1250x speedup compared to Kubernetes/Knative; full paper accepted at SOSP-24 the 30th ACM Symposium on Operating Systems.

Backend engineer BSI - Zürich *June 2022 - September 2023*

- Created an AI based microservice for applying real time text transcription and voice identification.
- Manipulated and optimized real time audio opus steams from byte representation to pytorch tensor.
- Improved and implemented new features on a huge software including over three millions lines code.

Backend engineer IPT - Bern *March 2022 - June 2022*

- Designed a data mining solution that analyze up 150+ billion entries in a database and cache information in NoSQL database using probabilistic machine learning algorithms and optimized SQL queries.

PROJECTS

- Implemented a bootloader including multiple drivers and memory protection in x86 and C.
- Developing a RISC-V based operating system in rust including process, cpu scheduling and MMU.
- Rewrote a published paper using SIMD and modern CPUs optimizations, achieving a 28x speedup.
- Implemented of a full-featured multicore operating system for the ARM-based PandaBoard.
- Implemented a lock-free single producer, single consumer FIFO queue, leveraging mordern cpp.
- Efficient CUDA SDDMM implementation beating pytorch C++/Cuda API on huge matrices.

SKILLS

- **Programming languages:** C, C++ (11/14/17/20), CUDA, Rust, Go, FGPAs, Asm (x86/RISC-V)
- **Systems skills :** Distributed systems, Serverless computing, Linux kernel configuration, Modern CPUs architectures, SIMD, Concurrent programming, GDB, GPUs, Memory Models, Docker, Compilers
- **Languages:** French (native), English (fluent), German (fluent), Italian (fluent)